



Description

A loop filter for a continuous time sigma delta analog to digital converter

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The invention refers to a loop filter for a continuous time sigma delta analog to digital converter.

10 The sigma delta analog to digital converters are among the key components in modern electronics.

Continuous time (CT) sigma delta modulators can operate at a higher sampling frequency than their discrete time (DT) counterparts.

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Fig. 1 shows a continuous time sigma delta analog to digital converter according to the state of the art. Continuous time sigma delta analog to digital converters (CT  $\Sigma\Delta$  ADC) are widely employed in wireless communication receivers as well as in sensor interfaces. The continuous time sigma delta analog to digital converter according to the state of the art as shown in Fig. 1 comprises two major components, i.e. a loop filter and a quantizer.

25 Fig. 2 shows the loop filter of the conventional analog digital converter in more detail. As can be seen from Fig. 2, the loop filter according to the state of the art includes a number of integrator elements which are connected in series to each other. The output signal of each integrator element is fed to the input of the next integrator element. Further, the output signal of each integrator element may be coupled via a feed-forward branch ( $C_i$ ) to a summing point at the output of the loop filter. In some loop filters, also feed-back branches are provided. As shown in Fig. 2 the loop filter of the conventional continuous time sigma delta analog to digital converter comprises an input terminal and receives the fed-back digital output signal of the analog-digital

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